



Insight

# The Future of Fuel: Opportunities in an Evolving Global Market

*By Kevin Petak, Hua Fang, and Michael Sloan*

## Shareables

1. ICF forecasts that 2016 will be prime time for assets to change hands. Midstream companies, investors, and utilities in the United States will need to update their portfolios to capture cost efficiencies within the Marcellus/Utica juggernaut and unload less cost-efficient resources to stay afloat.
2. Although most forecasters believe that prices will begin to increase only after 2020, ICF predicts that gas prices will rebound much sooner.
3. ICF sees the future of gas prices as hinging on the growth in demand for LNG and Mexican exports.

## Executive Summary

Natural gas prices are at some of the lowest levels we have seen in history, in large part due to the Marcellus/Utica shale gas revolution in the United States. What are the implications of these ultra-low natural gas prices, when can we anticipate gas prices to rebound, and how can utilities, developers, and investors create value in this environment? In a recent webinar, three of ICF's gas experts—Kevin Petak, Hua Fang, and Michael Sloan—explored the current state of gas markets to try to address these questions. In the coming year, midstream companies will need to shift their assets to take advantage of the growth in cost-effective supplies within the Marcellus/Utica markets and to unload less cost-effective resources. Similarly, financial firms will want to take a fresh look at

the value of their investments, focusing specifically on the promising Southwest region of the Marcellus/Utica. Utilities also have an opportunity to improve their situation by taking positions in infrastructure assets. Perhaps most notably, ICF anticipates that North America is positioned to be the next big gas exporter. As a result, ICF predicts that gas prices will rebound within the next 3–5 years because of growth in global demand for LNG and Mexican exports.

### Immediate Implications of Low Gas Prices

Natural gas prices have dropped to record inflation-adjusted lows. Between December 2015 and February 2016, natural gas prices teetered between \$1.93/MMBtu and \$2.28/MMBtu. These rock-bottom gas prices are being driven by asymmetrical supply-demand: The United States has a robust natural gas supply surplus stacked against a weak level of demand. The repercussions of this strong supply-weak demand equation are being felt throughout the industry—with producers struggling to stay afloat and midstream companies trying to reassess their asset strategy.

One question needling many U.S.-based utilities, equity firms, and midstream companies is: "When will we start to see a rebound in natural gas prices?" Although most forecasters believe that prices will begin to increase only after 2020, ICF predicts that gas prices will actually rebound much sooner due to the growing demand for liquefied natural gas (LNG) and Mexican exports over the next 3–5 years.

"North American gas prices are so competitive relative to other global sources, so it makes sense for foreign buyers of gas to be looking at the North American market as part of their portfolio for natural gas," said Petak.

But the growth in gas demand is not yet a slam dunk. The global energy market has many moving parts, and it is impossible to predict exactly how each element will unfold and influence demand for—and thus prices of—natural gas. Given the uncertain future of global gas demand, it is important to balance the future perspective with a close look inward to the evolving U.S. gas market to assess the immediate implications of low gas prices and to understand potential opportunities for growth.

Currently, Marcellus/Utica shale gas dominates the U.S. gas market. The Marcellus/Utica revolution has driven gas prices down everywhere, from the East Coast to Henry Hub to the West Coast. ICF estimates that the Marcellus/Utica natural gas supply will continue to grow from 19 bcfd in 2015 to 30 bcfd by 2020 ([Exhibit 1](#)), which means that Marcellus/Utica will continue to dictate gas prices—cannibalizing other supplies—particularly higher cost gas and shale plays.

<sup>1</sup> [https://www.eia.gov/dnav/ng/ng\\_pri\\_fut\\_sl\\_m.htm](https://www.eia.gov/dnav/ng/ng_pri_fut_sl_m.htm) history: <https://www.eia.gov/dnav/ng/hist/rngwhhdd.htm>

Three pricing points exemplify the changes in the Marcellus/Utica market. Dominion South Point is considered a generic point to value production out of Southwest Pennsylvania, Ohio, and West Virginia. Texas Eastern's M2 (Tetco M2) originally reflects costs of gas from the Gulf Coast to Northeast before the shale revolution. Finally, Leidy, located in Northeast Pennsylvania, is considered a pricing proxy for Marcellus/Utica production in Northeast Pennsylvania counties.

Because gas supply has shifted so significantly within the United States, utilities have had to redesign their gas pipeline infrastructure. Historically, most U.S. gas came from Texas and Louisiana and later from the Rockies, so utilities designed the nation's gas pipelines to move gas East and North. But given the Marcellus/Utica shale revolution, U.S. gas supplies are shifting to Pennsylvania, Ohio, and West Virginia, which means that instead of building long pipelines that traverse from West to East, companies are creating shorter pipelines to move gas from Pennsylvania to New York, Virginia, and Boston and from Ohio to the Midwest, South Atlantic, and Mid-Atlantic. For the first time ever, it is cheaper to transport gas from East to West than from West to East. These evolving changes driven by Marcellus/Utica gas markets have made it challenging for asset holders to assess the value of gas.

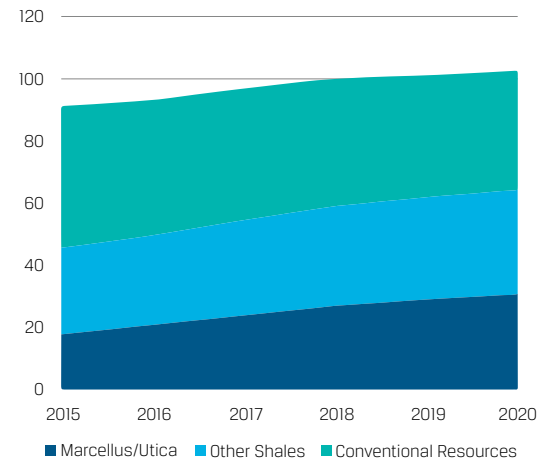
How will such low gas prices influence demand within the United States? ICF does not foresee a fundamental shift in end-use gas demand in North America in the short term. As a result, low gas prices driven by Marcellus/Utica will cause some producers to go bankrupt, which could, in turn, accelerate declines of older supplies and compel companies to reassess their assets. A potential outcome is that bankruptcies could help prices rebound. If a major producer goes bankrupt, those reserves may be held hostage until the situation is resolved. During this time, the producer's declining activity would bring the market into a more balanced supply-demand ratio faster and create a spike in gas prices as demand recovers. And when prices do rebound, as ICF predicts will happen, some of the less cost-efficient supplies will spring back to life.

### Opportunities and Risks in the Current Natural Gas Market

Given the low gas prices and risk of bankruptcies, key players in the U.S. gas market will need to assess the present opportunities and risks in the natural gas landscape in order to stay relevant.

#### EXHIBIT 1. SHALE GAS DOMINATES PROJECTED NATURAL GAS PRODUCTION FROM 2015-2020

##### Natural Gas Production (Bcfd)



Source: ICF

Overall, ICF predicts that 2016 will be a robust time for assets changing hands, particularly when producers realign their portfolios and try to capture some of the cost efficiencies within the Marcellus/Utica juggernaut and unload less cost-efficient resources. Upstream and midstream companies, in particular, will face tremendous financial pressure to show off their balance sheets or begin restructuring to continue their operations—and thus will have to reassess their assets and take advantage of the growth in cost-effective supplies. But these companies will need help from financial firms to maneuver this dangerous landscape.

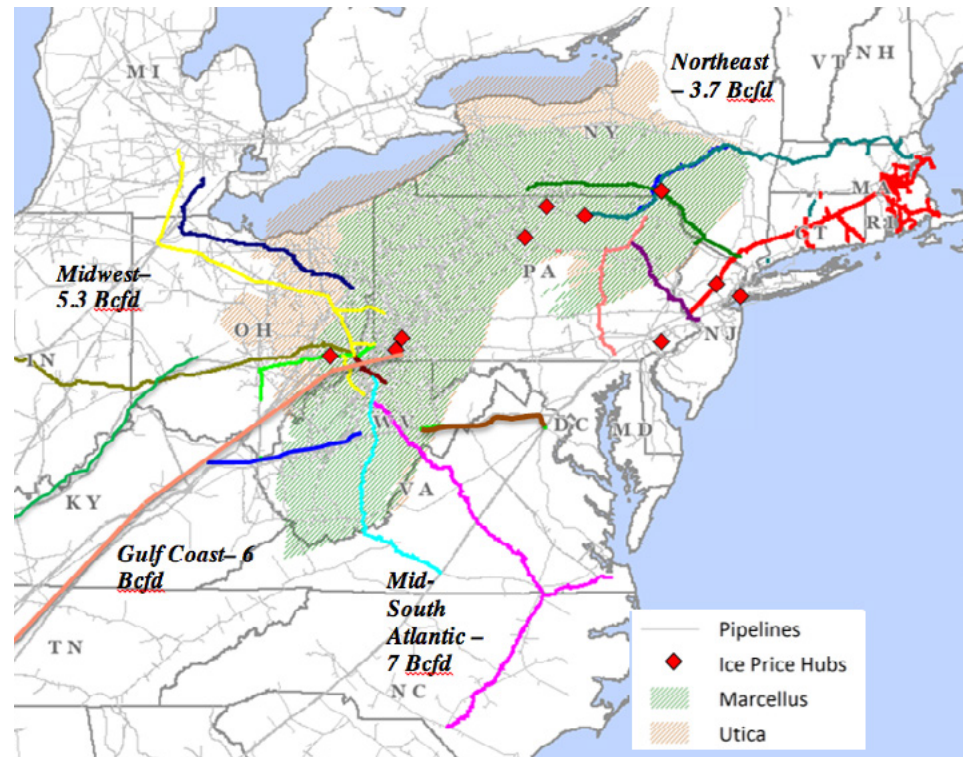
"I think the financial industry will be faced with a lot of opportunities to reevaluate the fair value of those upstream and midstream firms' assets holdings," said Fang.

The value of these assets will be based in part on their location and quality, but primarily on market factors, including market access, growth potential, and future infrastructure development. Investors can assess value in the following four main ways:

- 1. Location.** Location represents the primary driver for reserve value and production potential under a low-price environment. Cost of production and exploration could be significantly different depending on geological characteristics of the underlying resources.
- 2. Infrastructure.** Is there a pipeline infrastructure or proposed pipeline build that will take production to market?
- 3. Market.** Access to fast-growing markets and future infrastructure development makes the asset more valuable.
- 4. Leverage.** A producer's balance sheet determines how long the producer can sustain low prices.

With new pipeline proposals out of the Marcellus area, ICF predicts bigger price improvements in the Southwest than in the Northeast. The map ([Exhibit 2](#)) indicates where some of the new pipelines will be located.

EXHIBIT 2. PROPOSED PIPELINE INFRASTRUCTURE ALONG MARCELLUS/UTICA AFFECTS RESOURCE VALUE



Source: ICF

Much of the proposed new infrastructure would be constructed out of Dominion South Point territory: Southwest Pennsylvania, Ohio, and West Virginia. The new pipeline would funnel into the Midwest, West, the Gulf, and along the East Coast, bringing gas into the Carolinas and Georgia, where the power market is strong.

"Based on this trend, at least in the next few years, if we see the price of natural gas bounce back, the implication will be that Dominion South Point will be at an advantaged position compared to Leidy and producers in Northeast Pennsylvania because of the diversified path leading to different markets," Fang said.

Low oil prices discourage local distribution company (LDC) system expansion in the Northeast—a factor that is already causing producers to delay some pipeline projects. But this waning commitment to new pipeline builds is not all bad news. Such hesitations from producers may create opportunities for some LDCs and end users to step up to the plate and invest in pipeline growth.

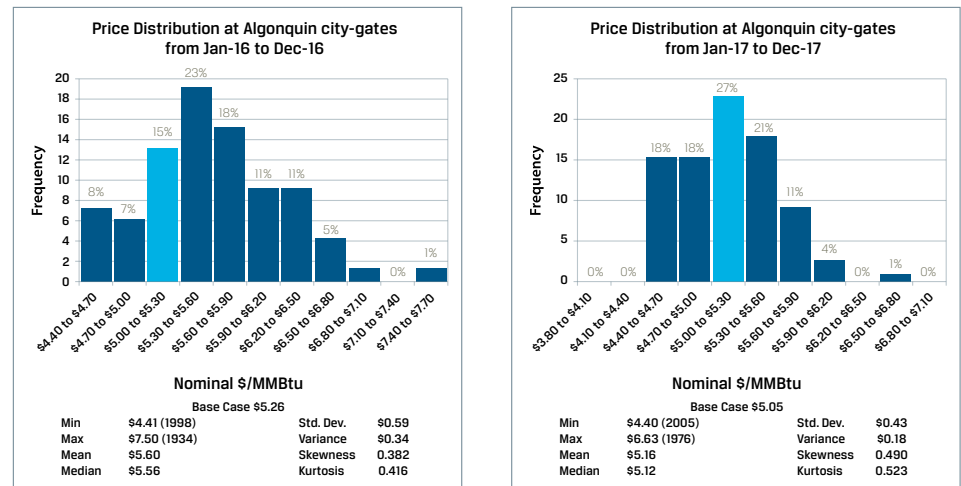
"Fortunately, there is a strong set of justifications for LDCs and end-users to step in and support new pipeline expansion," Sloan said.

LDCs have three key reasons to want to contract new pipeline capacity, particularly out of the Appalachian basin.

1. LDCs will have access to lower cost supply basins.
2. The additional pipeline capacity will drive down Algonquin city-gate gas prices.
3. New pipelines will help reduce future gas price volatility.

The combination of access to lower cost supply and the ability to drive regional prices down provides significant benefit to utilities contracted to new pipeline supply. The following charts predict how the pipeline expansion will reduce future gas price volatility in New England in 2016 versus 2017 (Exhibit 3).

**EXHIBIT 3. WEATHER VARIABILITY EFFECT LESS SKEWED AT ALGONQUIN CITY-GATES IN 2017 VERSUS 2016**



Once new pipeline projects begin to increase capacity in New England, the volatility will go down in those regions because of the enhanced pipeline capacity. In 2016, the price distribution is predicted to be much wider, spanning \$4.40/MMBtu up to \$7.70/MMBtu, while in 2017, this distribution narrows from \$4.40 to \$6.80 and is more highly concentrated in the lower range: \$4.40/MMBtu to \$5.90/MMBtu, indicating reduced volatility.

"When we look at other regions we see exactly the same thing—when we add pipeline capacity, we see lower prices and lower volatility providing significant benefits to LDCs, as they are provided the opportunity to shift their gas supply portfolio to take advantage of growth in Appalachian shale," said Sloan.

**Gas Prices Rebound: Projections and Implications for the Future**

Increasing demand is the key to increasing gas prices, and three factors have the potential to drive up demand. The first is that U.S. electricity consumers will demand more gas from the power sector as coal plants continue to retire and

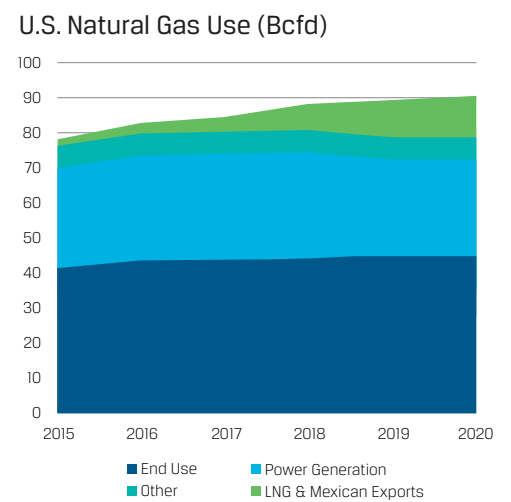


as new combined cycle plants are called upon to replace lost generation. This current trend seems likely to continue in the near and medium term. Second, growth in overall consumer electricity demand above replacing coal generation could also drive incremental gas demand growth. But neither factor is likely to increase electricity or gas demand significantly enough to boost gas prices.

The more likely scenario leading to demand growth is that North American gas demand will increasingly come from LNG and Mexican exports, and this growing demand for LNG and Mexican exports will, in turn, pump up gas prices. Although many forecasters predict that LNG and Mexican exports will be the key to turning demand around for gas producers and midstream developers, they do not necessarily agree on when this transition will occur. Most believe that the shift in demand will begin only after 2020; ICF, on the other hand, predicts that this will happen faster and in turn, gas prices will rebound over the next 3–5 years. ICF forecasts that LNG and Mexican exports will rise to 10 bcfd by 2018 and approach 12 bcfd in 2020 (Exhibit 4), which will cause gas prices to surge from the low \$2/MMBtu range into the \$4 MMBtu ballpark in that time (Exhibit 5).

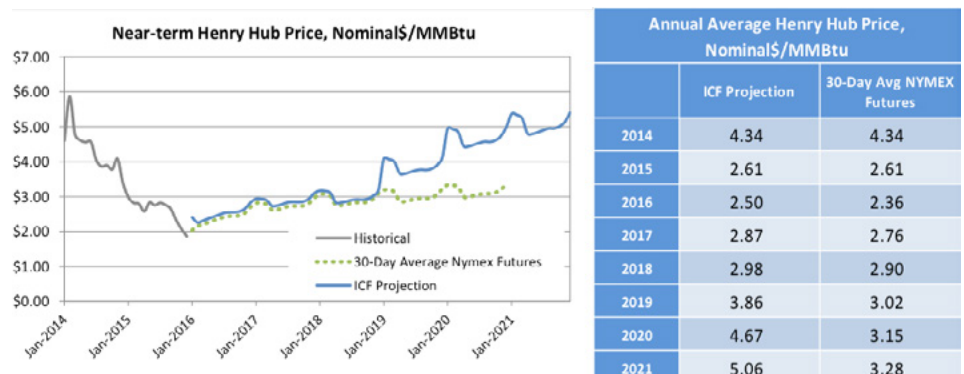
"The surprise in our projection...is we do see a price surge around 2018 and thereafter," Petak said. "It's not a done deal that this will happen, but our base case shows that the United States will switch from a net importer to a net exporter by 2018."

EXHIBIT 4. EXPORTS DRIVE PROJECTED GROWTH IN DEMAND THROUGH 2020



Source: ICF

EXHIBIT 5. PRICE REBOUND PROJECTED IN GAS PRICES THROUGH 2021



Source: ICF





As this predicted shift occurs, the U.S. economy may reap significant rewards. ICF estimates that LNG exports could contribute \$10–\$31 billion to the economies of natural gas-producing states, such as Texas, Louisiana, and Pennsylvania<sup>2</sup>. The focus on natural gas exports could mean tens of thousands of new jobs in states that produce and manufacture natural gas as well as those that build LNG export terminals. But several main challenges and uncertainties exist for LNG and Mexican export demand.

- First, demand growth will likely be uneven, which means that supply will continue to outpace demand over the next few years. Because demand is tied to the development of terminals—which tends to be lumpy—it will take several years before demand catches up to supply.
- Next, and perhaps more importantly, global markets remain in flux. This uncertain economic growth, particularly in Asia—a potentially big destination for gas exports from the United States—creates uncertainty surrounding the level of demand for LNG and Mexican exports. As such, the United States faces the very real risk of overbuilding liquefaction capacity.
- Competition from other nations will be part of the equation as well. Competing forces from around the globe may hamper demand for North American gas: Gazprom, for instance, will try to retain market share by keeping gas prices competitive in Europe to shut out the United States.
- Last but not least, low oil prices may continue to keep gas prices down.

"The billion dollar question going forward," said Petak, "is whether this relationship between oil and gas prices will break down over time."

## Conclusion

There are several takeaways for key players looking to find opportunities and minimize risk in an evolving gas market.

1. Midstream companies, investors, and LDCs and end-users need to focus on capturing the cost efficiencies in the Marcellus/Utica gas market, particularly in the Southwest Pennsylvania region.
2. Future demand growth in the United States will likely be uneven, but North America is positioned to be the next big gas exporter.
3. ICF predicts that gas prices will start to rebound by 2018.

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<sup>2</sup> ICF and EnSys Energy, "The Impacts of U.S. Crude Oil Exports on Domestic Crude Production, GDP, Employment, Trade, and Consumer Costs," March 31, 2014 and "Supplement State-Level Economic and Employment Impacts," May 9, 2014. <http://www.api.org/~media/Files/Policy/LNG-Exports/LNG-primer/Liquefied-Natural-Gas-exports-lowres.pdf>



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